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DISCOVERIES AND CURRENT EVENTS *

French West Africa: Locust Control in Senegal in 1934 (1).

The characteristic of locust invasions which have taken place from 1929 to 1933 in Senegal is the invasion of the Colony by swarms from neighbouring regions: Mauritania and the Sudan. Notably in 1929, the direction of the swarms was very definite. They came from well determined zones. Later these swarms gradually spread over a larger area and, in 1931-32-33, the invading swarms entered Senegal and Faleme by the valleys in all regions, which seems to show that the locusts in neighbouring Colonies were attracted to the river zone from whence they instinctively advanced towards the West and South-West. Thus, in 1933, swarms flew over Senegal, Faleme and passed on to Ferlo and the Cercle of Tambacounda, the invasion covering, as in the four previous years, the regions of Louga, Cayor, Baol, Sine-Saloum and Caramance.

The invasion of 1934 was very different and seemed to indicate a new phase in the locust invasions which had taken place since 1929 from North to South and from East to West. This time very few swarms came from outside the country, but rather spread out from Ferlo, the majority flying towards the East or North-East, that is, towards Mauritania or the Sudan. A few swarms, however, returned towards the West or South, West of the Cerles of Djoloff and Sine-Saloum, but these were exceptions.

Another centre is also reported South of the Cercle of Bakel and the swarms which passed over Casamance flew from East to West.

It is, therefore, no longer a question of foreign locusts, but of egg deposits within the uninhabited regions of the Colony (Ferlo, deserts of Tentaba or Camon). Almost all the swarms consisted of tropical migratory locusts (*Locusta migratoria migratorioides*) their direction being generally contrary to that of preceeding years which, we hope, indicates a return towards their country of origin, or at least towards the regions in the North of Senegal.

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As has already been reported in preceeding years the transmission of information has given great satisfaction in itself, but the basis of the system is uncertain though, with patience, it has been possible to gradually interest the farmers

* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the official correspondent of the Institute, Mr. DELASSUS, Chief of the Crop Protection and Phytopathological Inspection Service, Government General of Algeria, Algiers.

in the control of locusts in the apterous stage and in the destruction of egg pods as proved by the number of hopper bands destroyed and the number of breeding grounds reported, but the appearance of swarms from the interior of the country shows that reporting is not yet carried out by the nomads (Peilhs). The system of course cannot be applied in uninhabited or desert zones.

The control, as carried out, is difficult and if the destruction of egg pods or hopper bands is easy, it is absolutely useless against adults. Senegal, in spite of its reputation for being a desert zone, is, however, fairly well covered with shrubby vegetation and at Casamance there are forests sufficiently dense to prevent the locusts taking the poisoned bait laid down for them. The feeding habits of these adults is also characteristic. The leaves of palm trees (*Borassus, Elaeis*) are chiefly attacked, then the top branches of large trees and finally the undergrowth. Locusts attack the grass when foliage is lacking.

The use, therefore, of flour silicates or arsenic preparations is uncertain. The behaviour, also, of almost all these swarms prevents the operator following them closely as he is obliged to follow the roads or paths, his material being transported by camions; the flight of the swarms is of course unimpeded by sandy zones or swamps.

Argentine Republic: Locust Invasion during the Season 1934-1935 (1).

The invasion of the South American locust (*Schistocerca paranensis*) commenced early in the year. Towards the beginning of April swarms flew over the north of the province of Santa Fé.

On account of weather conditions the advance of the locusts was delayed towards the cultivated zones until the month of October when they spread all over the above mentioned province.

The provinces of Entre Ríos and Córdoba were invaded almost simultaneously and with less intensity, Santiago del Estero, Salta and Jujuy.

The work of control was started immediately using the material which is permanently at the disposal of the Ministry of Agriculture and also emergency measures, applying the methods which from long experience have proved to be most efficacious. First the largest possible quantity of adults (' voladora ') were destroyed (31 826 696 kg), then the eggs (' desoves ') (1 278 696 kg), then the larvae just emerged from the eggs (' mosquita ') (2 873 587 kg) and finally the hoppers (' saltona ') (133 903 134 kg).

For the destruction of the ' mosquita ' flame throwers burning naphtha and fuel oil were used and for the hoppers the barriers which have been used for many years in the Republic with good results. In possible future invasions experience gained in the destruction of the locusts with chemicals will be profited by. The work of destruction and investigation must also be co-ordinated with that of neighbouring countries, namely, Uruguay, Paraguay and Brazil.

(1) Communication from Mr. JUAN F. TOMASELLO, Agronomical Engineer, Chief of the Division de Defensa Agrícola, transmitted by the official correspondent of the Institute, Mr. JUAN B. MARCHIONATTO, Agronomical Engineer, Director of Sanidad Vegetal, Ministry of Agriculture, Buenos Aires.

It must also be noted that a great campaign against winged locusts was undertaken in the province of Entre Ríos during the months of July and August including two huge swarms extending over approximately 800 square kilometres and which invaded the districts of Don Cristobal, Algarrobitos, Ejido de Nogoyá, Chiquéros and the whole of Crucesitas.

On this occasion 9 000 000 kg of adults were destroyed. In the Department of Gualeguaychú, in the said province, another swarm settled over an area of 625 square kilometres, of which 2 000 000 kg were destroyed.

In the province of Córdoba the invasion reached greater proportions than has been known for many years necessitating the use of emergency measures which resulted in 1 900 000 hectares of maize and more tham 100 000 hectares of groundnut being saved.

In conclusion, it is considered that, on the whole, this invasion was less than that of 1933-1934 which reached exceptional proportions but which did not result in serious damage to the crops owing to the excellent organisation of the ' Defensa in Agrícola ' and the emergency measures voted by the National Congress for saving production from the depredations of the locusts.

Finland: Apple Powdery Mildew (*Podosphaera leucotricha*) (1).

Apple powdery mildew was observed for the first time in Finland in 1923. This fungus was destroyed by burning the young trees affected and by spraying all the apple and pear trees in the district. During the autumn of 1934, however, apple powdery mildew was reported in a garden near Helsinki. The parasite had been introduced by stocks of apple trees imported from Sweden in 1933. The new appearance of this disease is a very grave danger for apple growing in this country which already is hampered by many other difficulties due to the climate and the geographical situation.

India: Insect Pests Newly Recorded in Burma (2).

The following insect pests hitherto unrecorded in Burma were observed during 1934-35:—

(1) *Pempheres affinis*, Fst. breeding in the stem of a hybrid variety (Cambodia × USSR) of cotton.

(2) *Oregma lanigera*, Zehnt on sugar cane leaves in northern Burma.

(3) *Tetraneura hirsuta*, Baker on sugar cane roots.

(4) *Bruchus analis*, F. on pulses.

(5) *Br. phaseoli*, Gyll. on pulses.

(1) Communication from the official correspondent of the Institute, Professor J. I. Liro, Helsinki.

(2) Communication from the official correspondent of the Institute, Mr. C.C. Ghosh, B.A., F.R.E.S., Entomologist, Burma, Mandalay.

Mozambique: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

March, 1935.

Information received from all parts of the Colony has proved that the locust invasion has greatly diminished in comparison with the past season and that the invasion of the Colony by swarms coming from other countries has been considerably less.

Meteorological conditions, diseases caused by fungi and parasites, destruction by birds, Diptera, and worms, added to the active control carried out against the hoppers has resulted in a notable reduction in the plague and enables the conclusion to be drawn that the invasion is diminishing.

At the present time a few swarms are moving about without any fixed direction. On the southern border of Zululand and the eastern border of Swaziland a few swarms are in movement, crossing and re-crossing the borders. This phenomenom has not alarmed the farmers though it appears that it is not possible to carry out a complete destruction of the locusts by the groups executing the control even though they may be well equipped.

Uruguay: Organisation of the Locust Control (2).

Legislation.

Legislation on the control against the South American locust (*Schistocerca paranensis*) is given in the Law of 17 october 1891, afterwards modified by the Law of 27 October, 1908 and by various Decrees of the Executive Power which complete it.

We will confine ourselves here to simply refering to the principal points which are as follows.

It is compulsory for all occupiers - on whatever terms - of rural property, railway companies, Municipalities and the National Government on its lands, highways, roads, to destroy locusts in all stages of development; to report and define the places where egg-laying is taking place, within 48 hours, to the respective Commissions; to engage in the work of destruction all the staff judged necessary by the authorities and to be responsible for their maintenance and wages except in established cases of lack of means in which cases the corresponding Commission will be reponsible for the expenditure; to give assistance to neighbouring properties, which have been invaded, by means of staff, etc. Persons

(1) Communication from Mr. JULIO GARDÉ ALFARO CARDOSO, Chief of the Entomological Section, Lourenço Marques, transmitted to the Institute by the Director of Agricultural Services of the Colony.

(2) Communication from the official correspondents of the Institute, Mr. JAIME MOLINS, Junior, Agronomical Engineer, and Mr. AGUSTIN TRUJILLO PELUFFO, Agronomical Engineer, Dirección de Agronomía, Ministerio de Industrias, Montevideo.

infringing the said provisions will be punished by a fine of 30.00 to 100.006 ' pesos ', when the properties in question are less than 50 hectares, for larger estates the fine is increased by 20 cents per hectare on the land where the fine is imposed which cannot in any case exceed 1000 ' pesos ' (the ' peso ' of Uruguay is equal-to 1 dollar and 3 ½ cents). Appeals against these fines may be made to the Executive Power.

For the general direction of the campaign and the satisfactory execution of the Law, in all its parts, it is proposed to establish the following organisations:—

Central Commission for Locust Control.

This Commission includes the Director of Agronomy, the Chief of the Section ' Fomento y Defensa Agrícola ', delegates from the Ministries of Industry, the Interior, Public Works, War and Finance, also certain experts and persons recognised to be competent in the subject. The functions of this Commission are: The general direction of the locust campaign on the advice of the respective technical Bureaux; administration and collection of funds voted by the Government; distribution of material for the control; establishment of the 19 Zone Commissions, one for each Department of the Republic, etc.

Zone Commissions.

Each of these Commissions consist of 5 members presided aver by the Departmental Agronomy Expert and consisting of the Chief of Police, a delegate from the Municipality, and representatives of the Institutions for the Encouragement and Protection of Agriculture. Their duties are as follows: — To direct the control within the Department on the advice of the Departmental Agronomy Expert; to administrate the funds remitted by the Central Commission ; to supervise the distribution of material for the control; to nominate Inspectors overseer and workers for special work in accordance with the asignments fixed by the Central Commission; to organise gangs of workers on estates where the staff is insufficient to carry out the work of control; to impose and collect fines within the radius of the juridiction of the Commission in accordance with the Law; to nominate Sectional and District Commissions, etc.

Sectional and District Commissions.

These will be established in neighbouring estates in the locality and will consist of three members. The Sectional Commissions function in the same way as the Police Sections in the Department and the Districts Commissions are established according to the number considered necessary for the organisation of the control. The functions are similar to those of the Zone Commissions, but within a radius of action limited by the circumscription within which the activities of these Commissions are confined. The members will have the status and powers of Honorary Inspectors.

Regional Agronomy Experts.

These technical officials are permanently resident in the Departments presided over, as has been said, by the Zone Commissions and assume the direction of the control in these Departments. They also carry out the functions of inspectors; assemble the Sectional and District Commissions for the purpose of giving instructions and directing the control in the best possible manner. Their activities are of the utmost importance as on them is dependent the success or failure of the campaign.

General Inspectors.

These are Technical officials dependent on the 'Dirección de Agronomía', Section 'Fomento y Defensa Agrícola'. Their mission is to control and administrate the progress of all work and they are superior to the Departmental authorities. They superindent the various zones within the country, take all necessary measures, note the requirements in each region and inform the Section on the work carried during each period of the control.

For this purpose the Republic has been divided into 5 large areas, each including various Departments, and a General Inspector is appointed for each area.

Material Employed.

The Central Commission distributes to the Zone Commissions, in accordance with the size of the invasion in each Department, the necessary material for effectively controlling the locusts. This material is distributed free of charge through the medium and under the supervision of the respective Commissions. Both the Central and Zone Commissions are authorised to sell the said material at cost price. The Commissions also sell the necessary fuels for the insecticide machinery and flame throwers, at prices much below the current prices and which are exempted from all internal taxation.

The material distributed on 8 January, 1933, is as follows: —

Boundary posts	5 605
'Latigos'	15 017
Flame throwers	14 120
Naphta apparatus	9 479
Metal barriers 30 to 40 cm high	645 754 kg.
Liquid insecticides sprayers	187
Spray pumps	19
Naphta apparatus sold to private persons	2 983
Metal barriers sold	7 211

Fuels despatched on the same date:—

Denatured napta	2 182 040 litres
Denatured kerosene	189 000 »
Gas-oil	86 000 kg.

Credits Voted for the Campaign.

Up to the present the Public authorities have voted at different times the amount of half a million ' pesos ' (equivalent to 517 600 dollars) which has been spent on purchasing material, paying wages, payment by of the State of part of the cost of certains materials and chemical preparations for locust control, etc.

Methods of Control.

All methods have been employed which will not be described as they are already well known. Egg pods are controlled by means of ploughing, harrowing, hoeing, etc. Certain Commisions buy the egg pods thus encouraging the destruction of millions of eggs.

Liquid insecticides. — In this campaign, following investigations made by the Laboratory Section of the ' Dirección de Agronomía ' this organisation prepared a solution of caustic soda at 8 % which has given excellent results. At the same time cresylite of soda at 4 % was used which, being less caustic, is superior to the previous preparation, though the results are less saetisfactory when the ' mosquita ' become ' saltona '.

Commercial creoline at 3 % also gives good results within the first five days after hatching.

Gas-oil emulsion with water in proportions varying between 35 and 50% have given positive results, although they have the disadvantage of being very costly. In addition to these preparations, used for the first time in this country, the well known emulsions with a soda or potash soap and kerosene basis have also been used.

The lack of suitable spraying material chiefly in the stock breeding zones, has prevent the use of these insecticides to any great extent and it was necessary to have recourse to watering cans which as well as being a very slow process is also very costly as a quantity of the liquid is wasted.

Nevertheless the quantity of soda solution sold by the Central Commission under the name of ' Fluído Laboratório ' in tins of 200 litres each containing a concentrated solution to be diluted in five parts of water amounted, on 8 janaury, 1933, to 91 500 litres, representing 549 000 litres of insecticide. These figures show clearly the surcess of this control.

Poisoned baits. — In view of the size of this invasion and the relative damage caused in the various zones, by what may be called the classical methods, trial is at present being made of poisoned baits with apparently satisfactory results. Relatively to what was previously used, larger quantities are now being prepared for use in localities where the ' saltona ' is more abundant. The preparation of these poisoned baits requires a certain dexterity on the part of special staff, the the success of failure of the work carried out up to date having been dependent on this preparation.

Biological control. *Coccobacillus acridiorum.* — Studies on biological methods of control by means of *Coccobacillus acridiorum*, d'Hérelle, have been re-initiated.

Dr. Franz Fielitz, who uses a different technique to Dr. d'Hérelle, has prepared cultures of this micro-organism with which he expects to obtain more satisfactory results than by the d'Hérelle process.

Technicians of the ' Dirección de Agronomía ' are at present occupied in putting this biological process into execution in the zone invaded by locusts.

The National Council of Administration has nominated a Commission for examining the method and the practical results obtained with the d'Hérelle process modified by Dr. Franz Fielitz.

Phorbia cilicrura. — During the laying period, in certain regions of the country, the larva of *Phorbia cilicrura*, Rond. has been observed destroying the eggs of *Schistocerca.* Although this fly destroys a certain quantity of locust eggs there is a risk of its propagation as in the larval stage it is a parasite of certain cultivated plants, and for this reason it is advisable to destroy it, as far possible, at the same time as the locust eggs.

Mermis acridiorum. — Among the ' saltona ' bands in some localities there has been observed a certain number of insects in the abdomen of which has been noted the presence of one or more individuals of the Nematode *Mermis acridiorum* which produces a delay in the development of the locust and causes its death before it reaches the adult stage.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — According to the modifications, dated 12 March, 1935, to the provisions concerning protection against San José scale [*Aspidiotus perniciosus*] and apple maggot [*Rhagoletis pomenella*] [see this *Bulletin*, 1934, No. 10, p. 221], it is established that citrus fruits from Spain will be exempted from inspection with regard to San José scale. Each consignment, however, should be accompanied by a certificate of health and origin issued by the Spanish Phytopathological Service. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. April 1935, Bd. VII, Nr. 4, S. 36).

*** The ' Reichsbauernführer ' has published new general provisions regulating the recognition of seeds based on the Decree of 26 March, 1934 [see this *Bulletin*, 1934, No. 7, p. 156].

From the phytosanitary point of view these provisions are limited to prescribing in a general way, that the inspection of fields intended for seed production should be also extended to the health of the plants. The report which should be made out at the time should contain all observations, even those of little importance, concerning diseases of plants and weeds which have been observed.

It is established, *inter alia*, that farms which have beeen recognised as infested by wart disease of potatoes [*Synchytrium endobioticum*] should not be authorised to sell seed potatoes. (*Ibid.*, 10. Juni 1935, Nr. 6, S. 82-90).

*** The Decree of 24 April, 1935, containing modifications to the Decree of 17 July, 1934, concerning the use of highly poisonous products [see this *Bulletin*, 1934, No. 11, p. 247], forbids the treatment of vines with arsenical preparations, powders or liquids, after 31 July.

It is prescribed that the labels attached to recipients and packages, also prospectuses, should serve as advertisments or instructions, in as far as they contain instructions for use, they should be previously be submitted to the central service of plant propection and the service of public safety of the Reich for approval (*Ibid.*, S. 81-82).

*** By Notification of 8 April, 1935, published as an appendix to No. 18 of the *Reichsministerialblatt* (Zentralblatt für das Deutsche Reich), has been given a list of horticultural and botanical establishments, nurseries and gardens which are subject to regular supervision and are officially recognised as conforming to the conditions established by the International Convention of Bern on grape phylloxera. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Juni 1935, 15. Jahrg., Nr. 6, S. 59).

Germany (**Lübeck**). — By Police Ordinance of 19 March, 1935, on the prevention of the spreading of *Galinsoga parviflora* ('Franzosenkraut'), the control of this weed has been made compulsory.

Owners, usufructuaries and tenants of land are obliged to destroy the plants of *G. parviflora* by hoeing if the plants are young and by pulling up by the roots if the plants are in flower. The plants pulled up should be burnt immediately or buried in holes of at least 40 cm in depth. If there are considerable quantities it is also permitted to mixed them with earth, pile them in heaps, cover the heaps with earth and leave them to be destroyed by fermentation.

It is forbidden to throw the plants pulled up into the furrows, on to the roads or manure heaps, etc., on to land belonging to others or to leave them on the spot where they have been pulled up. (*Gesetz- und Verordnungsblatt der freien und Hansestadt Lübeck*, Lübeck, 30. März 1935, Nr. 5, S. 40).

Germany (**Prussia**). — By Decree of 14 February, 1935, the public establishments for seed disinfection in the department of Hanover are subject to official control. The provisions correspond exactly with those adopted by Decree of 4 June, 1934, in Prussian Saxony [see this *Bulletin*, 1934, No. 11, p. 248]. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juni 1935, Bd. VII, Nr. 6, S. 91-93).

*** By Decree of 7 March, 1935, annulling that of 5 February, 1934, relative to the cultivation of potatoes non-resistant to wart disease [*Synchytrium endobioticum*] [see this *Bulletin*, 1934, No. 5, p. 104], it has been forbidden, in certain

districts of the province of East Prussia, to cultivate, after 1 April, 1935, varieties of potatoes non-resistant to this disease. Only a few non-resistant early varieties may be cultivated this year, and for the last time. (*Ibid.*, S. 93).

England and Wales. — With the object of preventing the introduction of the cherry fruit fly [*Rhagoletis cerasi*], the Minister of Agriculture and Fisheries has made an Order [The Importation of Raw Cherries Order of 1935, dated May 3, 1935] regulating the importation of cherries into England and Wales during the 1935 season.

From 28 May, 1935 the importation of cherries grown in Spain and France has been prohibited, with the exception of French cherries grown within a small district around Honfleur.

Cherries grown in Italy will be admitted until 12 June, 1935, if accompanied by a certificate of origin. After that date only those grown in the region of Emilia will be allowed to enter; after 23 June, 1935, the importation of cherries grown in any part of Italy will be entirely prohibited.

Cherries grown in Germany will be admitted until 26 June, 1935, if accompanied by a certificate of origin; after that date no German cherries will be admitted except those certified not to have been grown south of latitude 53° N. or in East Prussia.

Certificates of origin must accompany cherries grown in any other European country. (*The Journal of the Ministry of Agriculture*, London, June, 1935, Vol. XLII, No. 3, p. 220).

Argentine Republic. — The Resolution No. 850 of 18 December, 1934, authorises the 'Dirección de Defensa Agrícola y Sanidad Vegetal' to hand over to the Argentine Fertilisers Syndicate, for industrial purposes, hoppers of the South American locust [*Schistocerca paranensis*]. (*Boletín Oficial de la República Argentina*, Buenos Aires, 23 de abril de 1935, año XLIII, núm. 12.254, pág. 930).

Colombia. — By 'Resolución' No. 8 of 23 January, 1935, a Commission is nominated for the purpose of studying a plague of ants which has appeared in the coffee plantations of the Municipality of Chinchiná, Department of Caldas and also the diseases existing in the crops of this region which may be related to these insects. (*Diario Oficial*, Bogotá, 2 de marzo de 1935, año LXXI, núm. 22825, pág. 517).

Eritrea. — By Decree No. 7090 of the High Commissioner for the East African Colonies, dated 4 March, 1935, imports of fresh fruit and vegetables into Eritrea are not subject to the provisions contained in the Decree No. 2026 of the Governor, dated 13 July, 1914. (*Bollettino Economico dell'Eritrea*, Asmara, 31 marzo 1935, anno VII, n. 81, p. 2940).

France. — The Law of 10 March, 1935, on the supression of fraud in the trade of products used for the destruction of pests of crops (insecticides, fungicides, etc.), establishes the following:—

Art. 1. — Article 1 of the Law of 4 August, 1903, modified by the Law of 18 April, 1922, is modified as follows:—

' According to the punishments provided for by Art. 13 of the Law of 1 August, 1905, modified by the Law of 21 July, 1929, all those will be punished who, when selling or delivering copper fungicides, raw material or mixtures, have failed to make known to the purchaser, on the bill as well as the invoice, the content in pure copper contained per 100 kg. in the material delivered. The same information should be clearly written on all packing material and receptacles in which the merchandise is delivered to the purchaser, on all packing material and receptacles in which the merchandise is packed before delivery to the purchaser and on all prospectuses, advertisments, price lists and commercial bills.

' The same punishments will be awarded to those who, when selling or delivering insecticides, fungicides, and, in general, all products used in the control of crop pests, raw material or mixtures, have not informed the purchaser of the content in useful elements contained in the products as delivered in the same conditions as described above '.

Art. 2. — Article 2 of the Law of 4 August, 1930, is completed as follows:—

' Regulations of public administration will determine the conditions of application for this Law with regard to the products mentioned in the last paragraph of the preceeding Article, other than copper fungicides '.

Art. 3. — The Law of 18 April, 1922, is revoked. (*Journal Officiel de la République Française*, Paris, 12 mars 1935, LXVII^e année, n° 60, p. 2914).

*** By Ministerial Decree of 23 March, 1935 a Commission has been established at the Ministry of Agriculture entrusted with the work of centralising and examining declarations on the planting of vines to replace those destroyed on account of infestation by grape phylloxera. (Ministère de l'Agriculture. Direction de l'Agriculture. *Bulletin de l'Office de Renseignements Agricoles*, Paris, 1^er avril 1935, année 1935, n° 7, p. 159).

Italy. — By Ministerial Decree of 12 March, 1935, and according to Art. 17 of Law No. 987 of 18 June, 1931, containing measures for the protection of cultivated plants and agricultural products against adverse conditions and also for the organisation of relative services [see this *Bulletin*, 1931, No. 9, p. 166], a compulsory Syndicate has been established for the improvement and development of fruit-growing in the province of Verona.

The contributions payable by members of the Syndicate cannot exceed 10 centesimi per tree in bearing. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 1° aprile 1935, anno VII, n. 10, pp. 1555-1556).

*** The Ministerial Decree of 18 March, 1935, establishes that, when wild boars existing in the territory of the commune of Subiaco damage the crops, the prefectorial commissary for the Commission for hunting in the province of Rome, may arrange for their destruction by employing competent persons possessing a regular permit to carry fire arms. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 23 marzo 1935, anno 76°, n. 69, p. 1156).

*** By Ministerial Decree of 25 March, 1935 and according to Art. 17 of the Law No. 987 of 18 June, 1931 concerning measures for the protection of cultivated plants and agricultural products against adverse conditions and the services relative thereto [see this *Bulletin*, 1931, No. 9, p. 166], a compulsory Syndicate for the improvement and development of fruit growing has been established in the province of Treviso. The contribution payable by members of the Syndicate cannot exceed 10 centesimi per tree in bearing. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 11 aprile 1935, anno VII, n. 11, pp. 1693-1694).

*** The Law No. 885 of 8 April, 1935 has transformed into a Law the Royal Decree-Law No. 2025 of 10 December, 1934, relative to the importation of liquid hydrocyanic acid for use in the control of scale insects of citrus trees [see this *Bulletin*, 1935, No. 2, p. 40]. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 17 giugno 1935, anno 76°, n. 141, p. 2992).

*** By Ministerial Decree of 12 April, 1935, and by virtue of Article 17 of the Law No. 987 of 18 June 1931 [see this *Bulletin*, 1931, No. 9, p. 166], a compulsory Syndicate for the improvement and development of fruit-growing has been established in the province of Ferrara.

The contribution payable by each member of the Syndicate cannot exceed 10 centesimi per tree in bearing. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 11 maggio 1935, anno VII, n. 14, pp. 2125-2126).

Mexico. — By 'Acuerdo' of 8 March, 1934 in all articles of the 'Ley Federal de Plagas y Reglamento de Policía Sanitaria Agrícola' in which jurisprudence was granted to the former 'Oficina Federal para la Defensa Agrícola' the same faculties are granted to the 'Dirección de Fomento Agrícola' for applying and interpreting the laws and regulations of the branch. (*Diario Oficial*, México, 23 de agosto de 1934, tomo LXXXV, núm. 46, pág. 962).

*** By 'Cuarentena interior' No. 1, dated 23 January, 1935, rules are established for carrying out a more efficacious control of the pink bollworm of cotton (*Pectinophora gossypiella*) and to prevent it spreading. *Inter alia*, 5 'control zones' are specified, that is to say, the areas limited and affected by this 'Cuarentena' including various Municipalities of the States of Coahuila, Durango, and Chihuahua. (*Ibid.*, 30 de marzo de 1935, tomo LXXXIX, núm. 26, pág. 443, 1 mapa).

Palestine. — By the Citrus Fruit Transport Rules, 1935, published on 24 April, 1935, citrus fruit found after inspection to be free from black scale [*Saissetia oleae*] and without leaves, twigs or branches may be transported from any part of Palestine to any other part. (*Hadar*, Tel-Aviv–Jaffa, Palestine, April, 1935, Vol. VIII, No. 4, pp. 118-119).

Netherlands (The). — The Law No. 242 of 9 May, 1935, contains new measures for preventing and controlling wart disease of potatoes (*Synchytrium endobioticum*). (*Staatsblad van het Koninkrijk der Nederlanden*, N° 242, blz. 1-7).

Peru. — By Ministerial Resolution No. 18 of 22 January, 1935, approval is given to the regulations contained in the ' Resolución suprema ' No. 141 of 15 December, 1934 [see this *Bulletin*, 1935, No. 6, p. 138] with regard to conditions for cultivating cotton in the valley of the Chira and its tributaries in relation to the pests ' arrebiatado ' (*Dysdercus ruficollis*) and ' gorgojo de la chupadera ' (*Gasterocercodes gossypii*). (*La Vida Agrícola*, Lima, marzo de 1935, vol. XII, n° 136, págs. 221 y 222).

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Every disease, its causal agent and the more appropriate control measures are discussed in detail and the most important literature is listed in each case at the end. Some diseases are treated in a more or less monographic form. Both in general text and in the explanations of text figures frequent use is made of Latin names of hosts and parasites. These, with the two indices and with bibliographic citations, may indicate to the foreign reader the contents of the book and the way in which the author treates his subject].

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[In Russian with the title and summary in French. — *Fusarium cruentum* n. sp. on the native variety of the vine called 'Ak-tchelak'; *Melampsora stellerae* n. sp. on *Stellera alberti* and *S. chamaejasme*. The Latin diagnoses are given of the two species].

Thomas, R. C. A bacteriophage in relation to Stewart's disease of corn. *Phytopathology*, Lancaster, Pa., 1935, Vol. 25, No. 3, pp. 371-372.
[*Aplanobacter stewarti*].

Tilford, Paul E. The use of the quinhydrone and antimony electrodes for determining the pH of solid culture media. *Phytopathology*, Lancaster, Pa., 1935, Vol. 25, No. 3, pp. 362-367. Literature cited, p. 367.

Tims, Eugene C. A Stilbum disease of fig in Louisiana. *Phytopathology*, Lancaster, Pa., 1935, Vol. 25, No. 2, pp. 208-222, figs. 1-2. Literature cited, pp. 220-222.
[*Stilbum cinnabarinum* on *Ficus carica*].

Traverso, Onorato. Insetti e crittogame parassiti delle piante da frutto, ornamentali, ortensi e agrarie. Anticrittogamici e insetticidi: metodi per usarli contro i parassiti. Manuale tecnico-pratico ad uso degli agricoltori, giardinieri e coltivatori dilettanti. Milano, Fratelli Ingegnoli, [1935], XV, 268 pp., 117 figg.
'As the author explains in the preface, the practical object of this manual is to facilitate the control of plant pests, to make known to growers the diseases

and parasites which are most common and most harmful, the fungicides and insecticides and the methods of employment in order to obtain the best results, to convince growers of the necessity and utility of availing themselves of the best methods of controlling plant diseases and pests. In order that the book should be of practical utility for all growers, and principally for gardeners who frequently practice varied and specialised branches of cultivation, the author has assembled in the same volume the diseases and pest which attack fruits and ornamental, horticultural and agricultural plants.

The manual is divided into four parts.

The first contains general information concerning entomology and plant pathology, the protection and treatment of plants, the insecticides and fungicides.

The second part contains a systematic survey of the species of plants which are subject to greater injury by parasites with short notes on the recognition of the principal and most injurious diseases and pests.

In the third part are enumerated noxious insects and other animals attacking plants, a description being given of each and the most suitable methods for their control.

The last part contains a survey of cryptogams and other plant parasites. As in the third part, descriptions are given of plant parasites and methods for their control].

TRINCHIERI, Giulio. Asserzioni gratuite. Il "black rot" della vite in Italia? *Il Coltivatore e Giornale Vinicolo Italiano*, Casale Monf., 1935, anno 81° e 61°, n. 9, pp. 230-232.

[Contradicts the statement made by G. Lüstner (see this *Bulletin*, 1935, No. 5, p. 121) that *Guignardia bidwellii* exists also in Italy].

TYLER, Leon J., and SHUMWAY, Clyde P. Hybridization between Sphacelotheca sorghi and Sorosporium reilianum. *Phytopathology*, Lancaster, Pa., 1935, Vol. 25, No. 3, pp. 375-376, fig. 1.

VANDERWALLE, R. Contribution à l'étude de la désinfection des céréales par l'eau chaude. 1re partie: L'action de la chaleur sur la germination des semences. *Bulletin de l'Institut agronomique et des Stations de Recherches de Gembloux*, Gembloux, 1935, tome IV, n° 1, p. 3-21, 11 diagr., fig. 1-3. Bibliographie, p. 15.

[With a summary in Flemish, German and English].

VAYSSIÈRE, P. Sur deux insectes récemment introduits en France. *Bulletin de la Société Entomologique de France*, Paris, 1935, tome XL, n° 3, p. 43-44.

[*Anaemerus fuscus* brought from West Africa to France with a specimen of *Tephrosia leptostachya*; *Paratrechina* (*Nylanderia*) *flavipes* on bulbs of *Lilium formosum* and *L. magnificum* from Japan].

VERDOORN, Fr. (Edited by). Chronica Botanica. Leiden, Netherlands, 1935, Vol. I, 447 pp., 85 portraits, 93 figs.

[This first volume of this 'Annual Record of Pure and Applied Botany', dated April, 1935, is edited and provisionally published by Dr. Fr. Verdoorn in collaboration with an advisory board and numerous assistant and corresponding editors, also with associate editors Messrs. Alan R. Gemmell, J. G. Verdoorn-Hunik, and H. Hirsch.

'Chronica Botanica' is at the same time a new year-book, directory and register devoted to all branches of plant science.

The volume commences with an article on ' International coöperation among botanists ', written by Dr. E. D. Merrill, Director of the New York Botanic Garden, and ends thus:—

' The « Chronica Botanica » as conceived covers a field not hitherto preëmpted, conflicts with no established periodical, supplements those already in existence, and should, by its very nature, encourage the spirit of international coöperation, a spirit characteristic of this our science, of which we, as botanists representing all nations, are individually and collectively proud. '

An almanac follows, giving past and future events (January, 1935-April, 1936). A special section treats in detail the forthcoming Sixth International Botanical Congress (Amsterdam, 2-7 September, 1935).

Considerable space (pp. 41-75) is also devoted to other congresses which have already taken place or will be held in 1935; to the past and future activities of the international and important associations, commissions, federations, istitutions, etc., which are more or less connected with pure and applied botany and the allied sciences.

The longest section (pp. 76-334) is that entitled ' Review of all branches of plant science during 1934 ' which gives all the scientific and personal news collected up to the end of January, 1935 and is an exhaustive and up-to-date address list of all institutions and societies. Countries and place-names are arranged in alphabetic order.

A section entitles ' Correspondence (Letters to the Editor and Queries)' contains subjects of general interest.

This is followed by: a list of new periodicals, new and changed addresses (pp. 345-378), editorial notes, a special supplement (Lanjouw, Uittien, and Ramaer: A short illustrated history of botany in the Netherlands), small classified advertisements (plants, books, appointments, instruments, miscellaneous), a general advertiser, an index of plant names and plant parasites, and index of persons.

It is superfluous to add that a large part of the volume is devoted to establishments and specialists in various parts of the world engaged on the study of plant pathology].

VOORHEES, R. K. Histological studies of a seedling disease of corn caused by Gibberella moniliformis. *Journal of Agricultural Research*, Washington, D. C., 1934, Vol. 49, No. 11, pp. 1009-1015, pls. 1-10. Literature cited p. 1015.

VOÛTE, A. D. Twee beschadigers van jonge mangga-loten: I de manggalotboorder (Chlumetia transversa Wlk.). II de plompe manggarups (Bombotelia jacosatrix Gn.). *Landbouw*, Buitenzorg 1934, X jaarg. (1934/35), no 7, blz. 255-271, pl. I-II. Literatuur, blz. 270.

[In Dutch, with the title and summary in English:— ' Two minor pests of young mango shoots (*Chlumetia transversa* and *Bombotelia jacosatrix*) '].

WAHL, Bruno. Erfahrungen über die San José-Schildlaus. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1935, 15. Jahrg., Nr. 4, S. 40; Nr. 5, S. 47-48.

[*Aspidiotus perniciosus*].

WALKER, J. C., and BLANK, L. M. Fusarium-resistant Danish Ballhead cabbage. *Journal of Agricultural Research*, Washington, D. C., 1934, Vol. 49, No. 11, pp. 983-989, fig. 1.

[*Fusarium conglutinans*].

WARDLAW, C. W. Diseases of the banana and of the Manila hemp plant. London, Macmillan and Co., Ltd., 1935, XII + 615 pp., 295 figs., 1 pl. Literature on banana diseases, pp. 575-602.

[The object of this volume is to give to students, scientific investigators and practical farmers as complete a description as possible of the present state of knowledge relative to diseases attacking the banana (*Musa* spp.) in various countries also Manila hemp or abacá (*M. textilis*).

In this way are reviewed the numerous fungus, bacteriological, physiological and virus diseases attacking the various parts of these plants; general information is given on each disease, the internal and external characteristics they produced are described, conditions favourable to their development and the most suitable means of prevention and control.

As might have been supposed the greatest amount of space is given to those diseases which are of major importance from the practical standpoint thus, for example four chapters (pp. 14-131) are devoted to banana wilt (Panama-disease) and wilt disease of the Manila hemp plant (*Fusarium cubense*); five (pp. 231-284) to diseases of bananas while still on the plant (pp. 385-535), and seven to diseases of fruits after gathering and during storage.

In an appendix is given a systematic and useful list of bacteria and fungi, both parasites and saprophytes, observed on *Musa* spp. (pp. 547-555)].

WELLMANN, F. L. Dissemination of southern celery-mosaic virus on vegetable crops in Florida. *Phytopathology*, Lancaster, Pa., 1935, Vol. 25, No. 3, pp. 289-308, figs. 1-6. Literature cited, p. 308.

WELLMANN, F. L. The host range of the southern celery as mosaic virus. *Phytopathology*, Lancaster, Pa., 1935, Vol. 25, No. 4, pp. 377-404. Literature cited, p. 404.

WENZL, Hans. Beobachtungen über die Anfälligkeit von Birnensorten gegen die Weissfleckenkrankheit (Mycosphaerella sentina). *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz*, Stuttgart 1935, 45. Bd., Heft 6/7, S. 305-316. Schriftenverzeichnis, S. 315-316.

WIESMANN, R. Untersuchungen über die Bedeutung der Ascosporen (Wintersporen) und der Konidien an den schorfigen Trieben für die Entstehung der Primärinfektionen des Apfelschorfpilzes Fusieladium dendriticum. *Landwirtschaftliches Jahrbuch der Schweiz*, Bern 1935, 49. Jahrg., Heft 2, S. 147-175, Fig. 1-9. Zitierte Literatur, S. 174-175.

[With a summary also in French].

WILHELM, A. F. Studien über die Bedeutung der Lipoide, insbesondere Phosphatide, für die Frostresistenz der Pflanzen. *Phytopathologische Zeitschrift*, Berlin 1935, Bd. VIII, Heft 3, S. 225-236. Literatur, S. 236.

WOLLENWEBER, H. W. Alpenveilchen-(Zyklamen-) Welke, eine Krankheit pilzlicher Natur. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1935, 15. Jahrg., Nr. 4, S. 38-39, Abb. 1-2.

[Wilt of *Cyclamen persicum* caused by *Fusarium oxysporum* var. *aurantiacum*. On the plants attacked *F. solani*, *Cylindrocarpon radicicola*, *Nectria rubi*, *N. septomyxa*, and *Gloeosporium fructigenum* have also been observed].

ZWÖLFER, W. Die Temperaturabhängigkeit der Entwicklung der Nonne (Lymantria monacha L.) und ihre bevölkerungswissenschaftliche Auswertung. *Zeitschrift für angewandte Entomologie*, Berlin 1934, Bd. XXI, Heft 3, S. 333-384, Abb. 1-18. Literatur, S. 383-384.

NOTES

The Fourth International Vine and Wine Congress. — This Congress will take place at Lausanne, Switzerland from 26 to 31 August, 1935 and will discuss, *inter alia*, the control of diseases and pests of the vine.

Sanitary Protection of the Coffee Tree and its Product in the Republic of Columbia. — The National Federation of Coffee Planters of Colombia, Bogotá, has established in its Central Experiment Station, Esperanza, department of Cundinamarca, a special service of sanitary protection for the coffee tree and its product by means of the Entomological and Phytopathological Sections, both of these Sections being in charge of experts specialised in such subjects.

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